



Department of Environmental Quality



To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

Dave Freudenthal, Governor

John Corra, Director

June 10, 2010

Mr. Craig A. Brown
General Manager, EH&S
Questar Market Resources
1050 17th Street, Suite 500
Denver, CO 80265

Permit No. CT-9112

Dear Mr. Brown:

The Division of Air Quality of the Wyoming Department of Environmental Quality has completed final review of Questar Market Resources' voluntary permit application to establish federally enforceable conditions for the Drill Rig Fleet located in the Jonah and Pinedale Anticline Development Area (JPDA) in Sublette County, Wyoming.

Following this agency's proposed approval of the request as published December 31, 2009, and in accordance with Chapter 6, Section 2(m) of the Wyoming Air Quality Standards and Regulations, the public was afforded a thirty (30) day period in which to submit comments concerning the proposed new source, and an opportunity for a public hearing. Public comments were received during the comment period and public hearing held April 6, 2010 and have been considered in the final permit. Therefore, on the basis of the information provided to us, approval to construct the Drill Rig Fleet as described in the application is hereby granted pursuant to Chapter 6, Section 2 of the regulations with the following conditions:

1. That authorized representatives of the Division of Air Quality be given permission to enter and inspect any property, premise or place on or at which an air pollution source is located or is being constructed or installed for the purpose of investigating actual or potential sources of air pollution and for determining compliance or non-compliance with any rules, standards, permits or orders.
2. That all substantive commitments and descriptions set forth in the application for this permit, unless superseded by a specific condition of this permit, are incorporated herein by this reference and are enforceable as conditions of this permit.
3. That all notifications, reports and correspondences associated with this permit shall be submitted to the Stationary Source Compliance Program Manager, Air Quality Division, 122 West 25th Street, Cheyenne, WY 82002 and a copy shall be submitted to the District Engineer, Air Quality Division, 510 Meadowview Drive, Lander, WY 82520.
4. This permit only applies to the Questar Market Resources Drill Rig Fleet while operating in the Jonah and Pinedale Anticline Development Area (JPDA). The permit conditions contained herein are only enforceable while operating drill rigs in the JPDA.
 - i. The JPDA area consists of 109W & R110W in T34N, R109W & R110W in T33N, R108W, R109W & R110W in T32N, R108W, R109W & R110W in T31N, R107W, R108W & R109W in T30N, R107W, R108W & R109W in T29N, R108W & R109W in T28N, and R107W, R108W & R109W in T27N.

Herschler Building • 122 West 25th Street • Cheyenne, WY 82002 • <http://deq.state.wy.us>

ADMIN/OUTREACH (307) 777-7937 FAX 777-3610	ABANDONED MINES (307) 777-6145 FAX 777-6462	AIR QUALITY (307) 777-7391 FAX 777-5616	INDUSTRIAL SITING (307) 777-7369 FAX 777-5973	LAND QUALITY (307) 777-7756 FAX 777-5864	SOLID & HAZ. WASTE (307) 777-7752 FAX 777-5973	WATER QUALITY (307) 777-7781 FAX 777-5973
--	---	---	---	--	--	---



2017-004853-00060

5. That written notification of the actual date of initial start-up for each drill rig/engine/boiler is required fifteen (15) days after start-up as defined in Condition 10. Such notification shall be submitted on a complete AQD-RIG Installation/Removal form. The form can be downloaded from the Air Quality Division website <http://deq.state.wy.us/aqd> or obtained from the Air Quality Division.
6. That upon removal of a drill rig/engine/boiler from the JPDA, written notification is required within fifteen (15) days of removal. Such notification shall be submitted on a complete AQD-RIG Installation/Removal form.
7. That by January 1, 2012, all drill rig engines shall be equipped with selective catalytic reduction (SCR).
8. Total actual annual NO_x emissions from all drill rig engines and boilers associated with the Questar Market Resources Drill Rig Fleet shall not exceed 384.1 tons per year (tpy) NO_x for 2009, 381.9 tpy NO_x for 2010, 375.1 tpy NO_x for 2011, and 152.2 tpy NO_x for 2012.
 - i. Total actual annual NO_x emissions from engines on any given drill rig equipped with SCR in the Questar Market Resources Drill Rig Fleet shall not exceed 10 tpy per drill rig. This requirement shall become effective January 1, 2011.
 - ii. Drill rig engines shall be equipped with SCR with a minimum NO_x control efficiency of ninety percent (90%).
9. Ammonia slip from each SCR air pollution control system shall not exceed 10 ppm_v at 15% O₂ as measured by initial and periodic testing.
10. Questar Market Resources shall conduct an initial performance test for each drill rig engine no later than ninety (90) days after start-up. Start-up shall be defined as follows:
 - i. For drill rig engines in service at the time of permit issuance, the start-up date shall be the permit issuance date.
 - ii. For all other drill rig engines, the start-up date shall be the date the drill rig commences drilling at the first well.
11. Initial performance testing as required by Condition 10 of this permit shall be conducted on the drill rig engines as follows:
 - i. For drill rig engines equipped with SCR:

NO_x Emissions: Compliance testing for NO_x shall be conducted in accordance with EPA approved reference methods or the State of Wyoming's Portable Analyzer Protocol. Testing shall consist of three (3) runs conducted at the inlet and outlet of the SCR system to determine the NO_x control efficiency. Results shall be reported in terms of percent control efficiency and g/hp-hr. Emissions shall be calculated using the following equation:

$$\text{g/hp-hr NO}_x = (\text{ppm NO}_{x_{\text{corrected}}})(1.19 \times 10^{-7})(F_{\text{factor}})\left(\frac{20.9}{20.9 - \text{O}_2\%_{\text{corrected}}}\right) \\ (\text{Brake Specific Fuel Consumption}(\text{Btu / hp-hr}))(10^{-6})(454)$$

VOC Emissions: Compliance testing for VOCs shall be conducted in accordance with a Division approved test method for one (1) engine of each engine type in the fleet.

Ammonia Slip: Compliance testing for ammonia slip shall be conducted in accordance with a Division approved test method.

Formaldehyde Emissions: Testing for formaldehyde shall be conducted in accordance with a Division approved test method for one (1) engine of each engine type in the fleet.

Urea flow (gph and /or liters per hour), engine load (%) and/or boost pressure (psi), and catalyst inlet temperature (°F and/or °C) shall be recorded during each run and submitted with the test report. The report shall also include the commissioning report. Brake specific fuel consumption (BSFC) shall be reported with the results for both the initial performance test and the commissioning report.

- ii. For drill rig engines not equipped with SCR:

NO_x Emissions: For diesel engines, testing for NO_x shall consist of three (3) 1-hour tests following EPA approved reference methods or the State of Wyoming's Portable Analyzer protocol. Emissions shall be calculated using the equation in Condition 11(i) above. Results shall be reported in terms of g/hp-hr.

VOC Emissions: Testing for VOCs shall be conducted in accordance with a Division approved test method for one (1) engine of each engine type in the fleet.

Formaldehyde Emissions: Testing for formaldehyde shall be conducted in accordance with a Division approved test method for one (1) engine of each engine type in the fleet

Engine load (%) and brake specific fuel consumption (BSFC) shall be provided in the report.

A test protocol shall be submitted for review and approval prior to testing. Notification of the test date shall be provided to the Division fifteen (15) days prior to testing. Results shall be submitted to the Division within forty-five (45) days of completion.

12. Periodic testing is required as follows:

- i. For drill rig engines equipped with SCR, each drill rig engine shall be tested quarterly. The first quarterly test is required the following calendar quarter after completion of the initial performance tests required under Condition 10.
 1. Testing for NO_x shall be conducted in accordance with EPA approved reference methods or the State of Wyoming's Portable Analyzer protocol. Testing shall consist of one (1) ten (10) minute run conducted at the inlet and outlet of the SCR system to determine the NO_x control efficiency. Results shall be submitted in terms of percent control efficiency and g/hp-hr. Brake Specific Fuel Consumption (BSFC) shall be provided in the report. Emissions shall be calculated using the equation listed in Condition 11.
 2. Testing for ammonia slip shall be conducted using Draeger-Tube detectors or other methods as approved by the Administrator.
 3. Urea flow (gph and /or liters per hour), engine load (%) and/or boost pressure (psi), and catalyst inlet temperature (°F and/or °C) shall be recorded during each run and submitted with the test report.
- ii. For drill rig engines not equipped with SCR, each drill rig engine shall be tested annually. The first annual test is required the following calendar year after completion of the initial performance tests required under Condition 11..
 1. Testing for NO_x shall be conducted in accordance with EPA approved reference methods or the State of Wyoming's Portable Analyzer protocol. Emissions shall be calculated using the equation listed in Condition 11.
 2. The engine load (%) and brake specific fuel consumption (BSFC) shall be provided in the report.
- iii. For SCR engines and non-SCR engines, a test protocol shall be submitted for review and approval prior to testing. Notification of the test date shall be provided to the Division fifteen (15) days prior to the testing. Results shall be submitted to the Division with the annual emissions inventory required by Condition 14 of this permit.
- iv. The Air Quality Division shall be notified within twenty-four (24) hours of the testing/monitoring required by this condition that shows operation outside the permitted emission limits. By no later than seven (7) calendar days of such testing/monitoring event, the owner or operator shall repair and retest/monitor the affected engine to demonstrate that the engine has been returned to operation within the permitted emission limits. Compliance with this permit condition regarding repair and retesting/monitoring shall not be deemed to limit the authority of the Air Quality Division to cite the owner or operator for an exceedance of the permitted emission limits for any testing/monitoring required by this condition which shows noncompliance.

13. Questar Market Resources shall follow the monitoring and maintenance requirements for each of the permitted engines equipped with a SCR system.
 - i. Operate and maintain the engine, SCR system, and monitoring equipment according to good air pollution control practices. The SCR system shall be operated at all times the drill rig is operating in the JPDA, except when the engine catalyst inlet temperature is less than 518°F. Records shall be kept to document periods when the SCR system is not operating and the engine is operating. The records shall include date, duration and cause.
 - ii. Operate the SCR Emission Control System in accordance with the manufacturer's recommendations which includes visually inspecting the catalysts and cleaning as necessary. Records shall be maintained of catalyst maintenance and replacement. Upon replacement of the catalyst, performance tests as required by Condition 11 shall be conducted.
 - iii. Records of urea flow (gph and /or liters per hour), engine load (%) and/or boost pressure (psi), and catalyst inlet temperature (°F and/or °C) shall be recorded, at minimum, daily when the engine is operating. Records of interim spot checks conducted to verify catalyst condition and any maintenance or corrective actions shall be kept for a period of at least five (5) years and shall be made available to the Division upon request.
 - iv. Within ninety (90) days of permit issuance, all drill rigs that are equipped with SCR shall be equipped with a datalogger to record urea flow (gph and /or liters per hour), engine load (%) and/or boost pressure (psi), and catalyst inlet temperature (°F and/or °C). Upon startup, new drill rig engines equipped with SCR require a datalogger. Data shall be recorded on an interval of fifteen (15) minutes or less. Records shall be kept for a period of at least five (5) years and shall be made available to the Division upon request.

14. Questar Market Resources shall report the following records for each well drilled.
- i. Drill Rig ID
 - ii. Well API number
 - iii. Well name
 - iv. Well location (longitude, latitude, elevation)
 - v. Drilling start and end dates
 - vi. Field name
 - vii. Equipment description, controls, and site rating
 - viii. Brake specific fuel consumption (BSFC)
 - ix. Total fuel usage for drill rig engines and boilers recorded on a daily basis
 - x. Heat content and sulfur content of fuel burned recorded from supplier certification
 - xi. Actual emissions for NO_x, CO, VOC, SO₂, PM₁₀, ammonia, and formaldehyde
 1. For engines, emissions shall be based on fuel consumption, g/hp-hr emission rates, and BSFC. Information recorded in Condition 13 regarding catalyst operation shall be utilized to calculate emissions from the engines.
 2. For boilers, emissions shall be based on fuel consumption, lb/MMBtu emission rates or AP-42 factors converted to lb/MMBtu, and BSFC.


The format presented in Appendix A shall be utilized to satisfy reporting requirements for the Division's annual emission inventory, which shall be submitted by March 31 of the following calendar year.

15. That drill rigs, boilers or engines that are subject to the conditions of this permit may be replaced without modifying this permit. Questar Market Resources shall provide notifications as required by Conditions 5 and 6 of this permit. The replacement drill rig(s)/engine(s)/boiler(s) shall comply with the conditions of this permit.
16. All records required under this permit shall be kept for a period of at least five (5) years and shall be made available to the Division upon request.
17. That should drill rig engine(s) meet the definition of a stationary source, Questar Market Resources shall comply with all state and federal regulations applicable for stationary sources.
18. Questar Market Resources shall comply with all local, state, and federal rules and regulations applicable to the drill rig fleet.

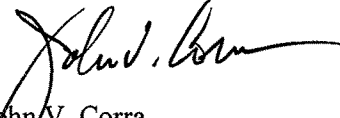
It must be noted that this approval does not relieve you of your obligation to comply with all applicable county, state, and federal standards, regulations or ordinances. Special attention must be given to Chapter 6, Section 2 of the Wyoming Air Quality Standards and Regulations. Any appeal of this permit as a final action of the Department must be made to the Environmental Quality Council within sixty (60) days of permit issuance per Section 16, Chapter I, General Rules of Practice and Procedure, Department of Environmental Quality.

If we may be of further assistance to you, please feel free to contact this office.

Sincerely,



Robert Gill
Acting Administrator
Air Quality Division



John V. Corra
Director
Dept. of Environmental Quality

cc: Tony Hoyt

Appendix A

Drill Rig Emission Reporting Form

(Sample data entries provided below)

List all wells drilled by each rig, showing the order of progression of wells drilled throughout the year

(Add additional rows as needed to provide data for each well drilled)

Input negative values for Rig Boilers under column heading "Site Rating"

* Use emission factors from actual test data and attach test results inclusive of tested rate

** Emission factors from manufacturer or AP-42 may be used if test data is not available

2017-004853-00060

Drill Rig Emissions - 2009

Diesel Fuel Consumption

(Sample data entries provided below for January through December 2009)

	Rig #1 (gallons)	Rig #2 (gallons)	Rig #3 (gallons)	Rig #4 (gallons)	Rig #5 (gallons)	Rig #6 (gallons)	Rig	Wells	Jan (gallons)	Totals (gallons)
January										
1	1,600	1,850	1,572	1,800	2,070	1,755	Rig #1	Well #1	41,995	41,995
2	1,700	2,054	2,390	1,800	1,380	1,990		Well #2	-	-
3	1,500	1,848	1,572	1,800	2,070	1,726			41,995	41,995
4	1,500	1,221	1,889	1,440	1,380	1,274	Rig #2	Well #3	19,696	19,696
5	1,600	1,848	1,753	1,800	2,300	1,345		Well #4	37,138	37,138
6	1,000	2,054	1,591	1,620	1,840	978		Well #5	-	-
7	600	1,848	1,591	1,620	1,870	1,745			56,834	56,834
8	1,000	2,054	1,462	1,400	1,840	1,794	Rig #3	Well #6	31,060	31,060
9	1,200	811	1,809	1,620	1,610	1,453		Well #7	19,579	19,579
10	1,200	1,848	1,572	1,620	1,840	2,387		Well #8	-	-
11	1,500	1,233	1,594	1,440	1,610	1,751			50,639	50,639
12	1,200	1,027	1,978	1,440	1,840	1,991	Rig #4	Well #9	42,580	42,580
13	1,300	1,027	1,897	1,800	1,840	1,868		Well #10	8,620	8,620
14	1,300	1,307	2,341	1,700	1,610	1,945		Well #11	-	-
15	1,122	2,054	1,992	1,440	1,610	1,990			51,200	51,200
16	1,496	1,849	1,580	1,800	1,640	1,876	Rig #5	Well #12	23,490	23,490
17	1,122	1,849	1,343	1,620	1,840	1,623		Well #13	33,510	33,510
18	1,122	2,054	1,134	1,080	1,840	1,724		Well #14	-	-
19	855	1,950	1,776	2,340	1,610	1,920			57,000	57,000
20	1,496	2,259	1,787	1,860	2,070	1,995	Rig #6	Well #15	9,068	9,068
21	1,870	1,844	1,591	2,180	1,640	1,765		Well #16	38,110	38,110
22	1,663	2,054	1,608	1,980	1,840	1,484		Well #17	-	-
23	1,496	2,065	2,132	1,580	1,620	1,747		Well #18	-	-
24	2,203	2,259	1,521	1,620	1,840	1,769			47,178	47,178
25	1,309	1,643	1,572	1,280	2,300	1,985				
26	1,496	2,157	1,594	900	1,820	1,824				
27	1,309	1,951	1,586	1,700	2,070	1,950				
28	1,309	2,054	1,608	1,980	1,840	1,769				
29	1,309	2,054	1,608	1,980	1,840	1,769				
30	1,309	2,054	1,608	1,980	1,840	1,769				
31	1,309	2,054	1,608	1,980	1,840	1,769				
Subtotal	41,995	56,834	50,639	51,200	57,000	47,178				

	Rig #1 (gallons)	Rig #2 (gallons)	Rig #3 (gallons)	Rig #4 (gallons)	Rig #5 (gallons)	Rig #6 (gallons)	Rig	Wells	Feb (gallons)	Totals (gallons)
February										
1	1,600	1,850	1,572	1,800	2,070	1,755	Rig #1	Well #1	38,068	38,068
2	1,700	2,054	2,390	1,800	1,380	1,990		Well #2	-	-
3	1,500	1,848	1,572	1,800	2,070	1,726			38,068	38,068
4	1,500	1,221	1,889	1,440	1,380	1,274	Rig #2	Well #3	19,696	19,696
5	1,600	1,848	1,753	1,800	2,300	1,345		Well #4	30,976	30,976
6	1,000	2,054	1,591	1,620	1,840	978		Well #5	-	-
7	600	1,848	1,591	1,620	1,870	1,745			50,672	50,672
8	1,000	2,054	1,462	1,400	1,840	1,794	Rig #3	Well #6	31,060	31,060
9	1,200	811	1,809	1,620	1,610	1,453		Well #7	14,755	14,755
10	1,200	1,848	1,572	1,620	1,840	2,387		Well #8	-	-
11	1,500	1,233	1,594	1,440	1,610	1,751			45,815	45,815
12	1,200	1,027	1,978	1,440	1,840	1,991	Rig #4	Well #9	42,580	42,580
13	1,300	1,027	1,897	1,800	1,840	1,868		Well #10	2,680	2,680
14	1,300	1,307	2,341	1,700	1,610	1,945		Well #11	-	-
15	1,122	2,054	1,992	1,440	1,610	1,990			45,260	45,260
16	1,496	1,849	1,580	1,800	1,640	1,876	Rig #5	Well #12	23,490	23,490
17	1,122	1,849	1,343	1,620	1,840	1,623		Well #13	27,990	27,990
18	1,122	2,054	1,134	1,080	1,840	1,724		Well #14	-	-
19	855	1,950	1,776	2,340	1,610	1,920			51,480	51,480
20	1,496	2,259	1,787	1,860	2,070	1,995	Rig #6	Well #15	9,068	9,068
21	1,870	1,844	1,591	2,180	1,640	1,765		Well #16	35,803	35,803
22	1,663	2,054	1,608	1,980	1,840	1,484		Well #17	-	-
23	1,496	2,065	2,132	1,580	1,620	1,747		Well #18	-	-
24	2,203	2,259	1,521	1,620	1,840	1,769			44,871	44,871
25	1,309	1,643	1,572	1,280	2,300	1,985				
26	1,496	2,157	1,594	900	1,820	1,824				
27	1,309	1,951	1,586	1,700	2,070	1,950				
28	1,309	2,054	1,608	1,980	1,840	1,769				
Subtotal	38,068	50,672	45,815	45,260	51,480	44,871				

	Rig #1 (gallons)	Rig #2 (gallons)	Rig #3 (gallons)	Rig #4 (gallons)	Rig #5 (gallons)	Rig #6 (gallons)	Rig	Wells	Mar (gallons)	Totals (gallons)
March										
1	1,500	1,427	1,389	2,180	1,840	731	Rig #1	Well #1	5,200	5,200
2	800	1,848	1,572	1,800	1,990	1,597		Well #2	31,822	31,822
3	900	2,259	1,388	1,800	1,940	2,498			37,022	37,022
4	1,200	1,848	1,572	1,800	1,840	1,636	Rig #2	Well #3	-	-
5	800	1,848	1,224	1,200	1,850	1,306		Well #4	10,656	10,656
6	800	805	1,739	1,800	1,510	1,945		Well #5	38,856	38,856
7	800	821	1,986	1,620	1,080	1,591			49,512	49,512
8	850	821	1,970	1,440	1,400	1,977	Rig #3	Well #6	-	-
9	1,500	1,233	1,570	1,440	1,600	2,132		Well #7	22,447	22,447
10	800	1,232	1,610	1,440	1,610	1,733		Well #8	25,588	25,588
11	1,300	1,049	1,979	1,440	2,070	1,733			48,035	48,035
12	1,150	1,246	1,694	1,440	1,840	1,624	Rig #4	Well #9	-	-
13	1,150	1,849	1,935	1,440	1,640	1,958		Well #10	37,400	37,400
14	1,900	1,232	1,000	1,620	1,730	1,685		Well #11	10,270	10,270
15	1,122	1,648	1,250	1,620	1,610	1,688			47,670	47,670
16	1,455	2,054	1,889	1,620	1,610	1,930	Rig #5	Well #12	-	-
17	1,336	1,849	1,176	1,800	1,640	2,324		Well #13	10,730	10,730
18	1,309	1,848	1,551	1,800	1,620	1,870		Well #14	41,160	41,160
19	1,122	2,054	1,651	1,900	2,070	1,472			51,890	51,890
20	1,122	811	1,532	1,800	1,970	800	Rig #6	Well #15	-	-
21	1,496	1,844	1,701	1,800	2,070	900		Well #16	-	-
22	1,122	1,848	1,188	1,260	1,670	730		Well #17	38,736	38,736
23	1,455	2,054	1,637	1,080	1,530	590		Well #18	4,119	4,119
24	1,122	2,054	1,504	1,620	2,070	1,012			42,655	42,655
25	1,309	1,232	1,572	1,280	2,070	720				
26	1,122	800	1,705	1,260	1,970	650				
27	1,309	1,436	1,130	1,980	1,840	620				
28	1,122	1,848	1,530	1,720	1,610	950				
29	850	2,054	1,896	1,620	1,840	885				
30	1,500	2,640	1,974	1,620	1,570	885				
31	1,500	1,426	1,121	1,620	1,860	1,156				
Subtotal	37,022	49,512	48,035	47,670	51,890	42,655				

Drill Rig Emissions - 2009

Natural Gas Consumption

(Sample data entries provided below for January through December 2009)

2009 Drill Rig Natural Gas Consumption												
	Rig #1 (gallons)	Rig #2 (gallons)	Rig #3 (gallons)	Rig #4 (gallons)	Rig #5 (gallons)	Rig #6 (gallons)		Rig	Wells	Jan (gallons)	Totals (gallons)	
January												
1	1,600	1,850	1,572	1,800	2,070	1,755		Rig #1	Well #1	41,995	41,995	
2	1,700	2,054	2,390	1,800	1,380	1,990			Well #2	-	-	
3	1,500	1,848	1,572	1,800	2,070	1,726				-	41,995	
4	1,500	1,221	1,889	1,440	1,380	1,274		Rig #2	Well #3	19,696	19,696	
5	1,600	1,848	1,753	1,800	2,300	1,345			Well #4	37,138	37,138	
6	1,000	2,054	1,591	1,620	1,840	978			Well #5	-	-	
7	600	1,848	1,591	1,620	1,870	1,745				-	56,834	
8	1,000	2,054	1,462	1,400	1,840	1,794		Rig #3	Well #6	31,060	31,060	
9	1,200	811	1,809	1,620	1,610	1,453			Well #7	19,579	19,579	
10	1,200	1,848	1,572	1,620	1,840	2,387			Well #8	-	-	
11	1,500	1,233	1,594	1,440	1,610	1,761		Rig #4	Well #9	42,580	42,580	
12	1,200	1,027	1,978	1,440	1,840	1,891			Well #10	8,620	8,620	
13	1,300	1,027	1,897	1,800	1,840	1,856			Well #11	-	-	
14	1,300	1,307	2,341	1,700	1,610	1,945				-	51,200	
15	1,122	2,054	1,992	1,440	1,610	1,990		Rig #5	Well #12	23,490	23,490	
16	1,486	1,848	1,580	1,800	1,840	1,876			Well #13	33,510	33,510	
17	1,122	1,848	1,343	1,620	1,840	1,623			Well #14	-	-	
18	1,122	2,054	1,134	1,080	1,840	1,724				-	57,000	
19	855	1,950	1,776	2,340	1,810	1,920		Rig #6	Well #15	9,068	9,068	
20	1,486	2,259	1,787	1,860	2,070	1,395			Well #16	38,110	38,110	
21	1,870	1,644	1,591	2,180	1,840	1,785			Well #17	-	-	
22	1,663	2,054	1,606	1,980	1,840	1,484			Well #18	-	-	
23	1,496	2,865	2,112	1,580	1,820	1,747			Well #19	-	-	
24	2,203	2,259	1,521	1,620	1,840	1,780				-	47,178	
25	1,309	1,643	1,572	1,280	2,300	1,985				-	-	
26	1,486	2,157	1,594	900	1,820	824				-	-	
27	1,309	1,851	1,586	1,700	2,070	950				-	-	
28	1,309	2,054	1,608	1,980	1,840	1,769				-	-	
29	1,309	2,054	1,608	1,980	1,840	1,769				-	-	
30	1,309	2,054	1,608	1,980	1,840	1,769				-	-	
31	1,309	2,054	1,608	1,980	1,840	1,769				-	-	
	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)						
Subtotal	41,995	56,834	50,639	51,200	57,000	47,178						

	Rig #1 (gallons)	Rig #2 (gallons)	Rig #3 (gallons)	Rig #4 (gallons)	Rig #5 (gallons)	Rig #6 (gallons)		Rig	Wells	Feb (gallons)	Totals (gallons)	
February												
1	1,600	1,850	1,572	1,800	2,070	1,755		Rig #1	Well #1	38,068	38,068	
2	1,700	2,054	2,390	1,800	1,380	1,990			Well #2	-	-	
3	1,500	1,848	1,572	1,800	2,070	1,726				-	38,068	
4	1,500	1,221	1,889	1,440	1,380	1,274		Rig #2	Well #3	19,696	19,696	
5	1,600	1,848	1,753	1,800	2,300	1,345			Well #4	30,976	30,976	
6	1,000	2,054	1,591	1,620	1,840	978			Well #5	-	-	
7	600	1,848	1,591	1,620	1,870	1,745				-	50,672	
8	1,000	2,054	1,462	1,400	1,840	1,794		Rig #3	Well #6	31,060	31,060	
9	1,200	811	1,809	1,620	1,610	1,453			Well #7	14,755	14,755	
10	1,200	1,848	1,572	1,620	1,840	2,387			Well #8	-	-	
11	1,500	1,233	1,594	1,440	1,610	1,761		Rig #4	Well #9	42,580	42,580	
12	1,200	1,027	1,978	1,440	1,840	1,891			Well #10	2,680	2,680	
13	1,300	1,027	1,897	1,800	1,840	1,856			Well #11	-	-	
14	1,300	1,307	2,341	1,700	1,610	1,945				-	45,260	
15	1,122	2,054	1,992	1,440	1,610	1,990		Rig #5	Well #12	23,490	23,490	
16	1,486	1,848	1,580	1,800	1,840	1,876			Well #13	27,980	27,980	
17	1,122	1,848	1,343	1,620	1,840	1,623			Well #14	-	-	
18	1,122	2,054	1,134	1,080	1,840	1,724				-	51,480	
19	855	1,950	1,776	2,340	1,810	1,920		Rig #6	Well #15	9,068	9,068	
20	1,486	2,259	1,787	1,860	2,070	1,395			Well #16	35,803	35,803	
21	1,870	1,644	1,591	2,180	1,840	1,785			Well #17	-	-	
22	1,663	2,054	1,606	1,980	1,840	1,484			Well #18	-	-	
23	1,496	2,865	2,112	1,580	1,820	1,747			Well #19	-	-	
24	2,203	2,259	1,521	1,620	1,840	1,780				-	44,871	
25	1,309	1,643	1,572	1,280	2,300	1,985				-	-	
26	1,486	2,157	1,594	900	1,820	824				-	-	
27	1,309	1,851	1,586	1,700	2,070	950				-	-	
28	1,309	2,054	1,608	1,980	1,840	1,769				-	-	
	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)						
Subtotal	38,068	50,672	45,815	45,260	51,480	44,871						

	Rig #1 (gallons)	Rig #2 (gallons)	Rig #3 (gallons)	Rig #4 (gallons)	Rig #5 (gallons)	Rig #6 (gallons)		Rig	Wells	Mar (gallons)	Totals (gallons)	
March												
1	1,500	1,427	1,399	2,180	1,840	1,761		Rig #1	Well #1	5,200	5,200	
2	800	1,848	1,580	1,800	1,850	1,597			Well #2	31,822	31,822	
3	900	2,259	1,393	1,800	1,840	2,488				-	37,022	
4	1,200	1,848	1,993	1,980	1,840	1,306		Rig #2	Well #3	-	-	
5	800	1,848	1,224	1,260	1,850	1,306			Well #4	10,656	10,656	
6	800	805	1,739	1,800	1,510	1,045			Well #5	38,856	38,856	
7	800	821	1,926	1,620	1,060	1,504				-	49,512	
8	850	821	1,870	1,440	1,450	1,977		Rig #3	Well #6	-	-	
9	1,500	1,233	1,870	1,440	1,610	2,152			Well #7	22,447	22,447	
10	900	1,232	1,810	1,440	1,610	1,743			Well #8	25,588	25,588	
11	1,300	1,848	1,979	1,440	2,070	1,763				-	48,035	
12	1,150	1,848	1,594	1,440	1,840	1,504		Rig #4	Well #9	-	-	
13	1,150	1,840	1,935	1,440	1,840	1,956			Well #10	37,400	37,400	
14	1,500	1,232	1,000	1,620	1,720	1,685			Well #11	10,270	10,270	
15	1,122	1,848	1,250	1,520	1,610	1,959				-	47,670	
16	1,455	2,054	1,850	1,620	1,610	1,900		Rig #5	Well #12	-	-	
17	935	1,848	1,476	1,480	1,840	2,284			Well #13	10,730	10,730	
18	1,309	1,848	1,691	1,800	1,650	1,678			Well #14	41,160	41,160	
19	1,122	2,054	1,691	1,800	2,070	1,672				-	51,890	
20	1,122	911	1,552	800	1,970	600		Rig #6	Well #15	-	-	
21	1,496	1,848	1,701	1,800	2,070	600			Well #16	-	-	
22	1,122	1,848	1,483	1,260	1,070	750			Well #17	38,736	38,736	
23	1,455	2,054	1,577	1,080	1,520	950			Well #18	4,119	4,119	
24	1,122	2,054	1,604	1,540	2,070	1,012				-	42,855	
25	1,309	1,232	1,572	750	2,070	720				-	-	
26	1,122	800	1,705	1,220	1,970	650				-	-	
27	1,309	1,438	1,168	1,080	1,930	620				-	-	
28	1,122	1,848	1,680	1,720	1,610	950				-	-	
29	1,650	2,054	1,888	1,620	1,840	963				-	-	
30	1,500	2,540	1,974	1,620	1,610	983				-	-	
31	1,500	1,428	1,121	1,620	1,950	1,163				-	-	
	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)	(gallons)						
Subtotal	37,022	49,512	48,035	47,670	51,890	42,855						